AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (original): A test device for detecting alignment of deep trench capacitors and word lines in DRAM devices with vertical transistors, wherein the test device is disposed in a scribe line region of a wafer, comprising:

an active area disposed in the scribe line region;

an H-type deep trench capacitor disposed in the active area, having parallel first and second portions and a third portion, wherein each of the first and second portions has a center and two ends, and the third portion is disposed between the centers of the first and second portions;

first to fourth conductive pads disposed on the two ends of the first and second portions respectively; and

a bar-type conductive pad disposed between the first and second portions, having a center aligned with a center of the third portion.

Claim 2 (original): The test device as claimed in claim 1, wherein the first to fourth conductive pads and the bar-type conductive pad are made of the same material.

Claim 3 (original): The test device as claimed in claim 1, wherein the first to fourth conductive pads and the bar-type conductive pad are made of polysilicon.

Claim 4 (original): The test device as claimed in claim 1, wherein the bar-type conductive pad, the first portion and the second portion are parallel.

Claim 5 (currently amended): A method for detecting alignment of deep trench capacitors and word lines in DRAM devices with vertical transistors, comprising:

providing a wafer with at least one scribe line region and at least one memory region;

forming a plurality of memory cells with vertical transistors in the memory region and at least one test device in the scribe line region simultaneously, wherein the

memory cells have word line areas and deep trench capacitors, the test device including:

an active area disposed in the scribe line region;

an H-type deep trench capacitor disposed in the active area, having parallel first and second portions and a third portion, wherein each of the first and second portions has a center and two ends, and the third portion is disposed between the centers of the first and second portions;

first to fourth conductive pads disposed on the two ends of the first and second portions respectively; and

a bar-type conductive pad disposed between the first and second portions, having a center aligned with a center of the third portion;

detecting a first resistance between the first conductive pad disposed on the first portion and the bar-type conductive pad, and a second resistance between the second conductive pad disposed on the second portion and the bar-type conductive pad;

determining alignment of the H-type deep trench capacitor and the bar-type conductive pad according to the first resistance and the second resistance; and

determining alignment of the deep trench capacitors and word lines in the memory ~~regions~~ region according to alignment of the H-type deep trench capacitor and the bar-type conductive pad of the test device.

Claim 6 (original): The method as claimed in claim 5, wherein the bar-type conductive pad is a predetermined distance from the first and second portions.

Claim 7 (currently amended): The method as claimed in Claim 6, further comprising a step of determining alignment shift (ΔL) of the H-type deep trench capacitor and the bar-type conductive pad ~~area~~ according to the first resistance, the second resistance, and the predetermined distance between first and second portions and the bar-type conductive pad respectively.

Claim 8 (original): The method as claimed in Claim 7, wherein the alignment shift (ΔL) is determined by an equation:

$$\Delta L = L \times \frac{(R2 - R1)}{(R2 + R1)};$$

wherein L is the predetermined distance between first and second portions and the bar-type conductive pad respectively; R1 is the first resistance between the first conductive pad disposed on the first portion and the bar-type conductive pad; and R2 is the second resistance between the second conductive pad disposed on the second portion and the bar-type conductive pad.

Claim 9 (original): The method as claimed in claim 5, wherein the first to fourth conductive pads and the bar-type conductive pad are made by the same material.

Claim 10 (original): The method as claimed in claim 5, wherein the first to fourth conductive pads and the bar-type conductive pad are made of polysilicon.

Claim 11 (original): The method as claimed in claim 5, wherein the bar-type conductive pad, the first portion and the second portion are parallel.

Claim 12 (currently amended): The method as claimed in claim 5, wherein the alignment of the H-type trench ~~capacitors~~ capacitor and the bar-type conductive pad is abnormal when the first resistance does not equal the second resistance.